FAA SAFETY BRIEFING

FEDERAL AVIATION AGENCY

Vol. 50 No. 1 January/February 2011

CELEBRATING 50 YEARS OF AVIATION NEWS!

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The January/February 2011 issue of FAA Safety Briefing *celebrates the 50th anniversary of the publication by looking back at the enormous general aviation safety strides we have made as a community and by looking forward to how we can work together to reduce GA accidents. Also, learn about ramp safety, risk management, and how to outfit your aircraft to improve survivability in case of an accident.*

Photo by James Williams

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Jumpseat

JOHN M. ALLEN
DIRECTOR, FLIGHT STANDARDS SERVICE

Dear Fellow Airman

In January 1961, FAA published the first issue of *Aviation News*, the predecessor to today's *FAA Safety Briefing*. The inaugural issue's proclaimed purpose was "to acquaint readers with the policies and programs" of the FAA. That first issue covered such topics as "FAA Revises Radio Frequency Plan," highlighting a plan for continuing communications service below 24,000 feet; "Fliers Give New Service High Marks," about a new Flight Following Service for GA pilots; and "Improvements Noted under Medical Examiner Program" showing the geographic distribution of 4,087 designated Aviation Medical Examiners. An editorial addressing FAA's approach to its regulatory role said, "FAA's underlying philosophy in the area of enforcement can be summed up in a phrase: Willing compliance."

Two months later, on March 3, 1961, *on the day* he was sworn in as the second FAA administrator, Najeeb Halaby wrote a letter to nearly 300,000 certificated pilots. The letter was intended to soften FAA's policeman image with airmen, historian Richard J. Kent, Jr. writes in *Safe, Separated and Soaring, A History of Civil Aviation 1961–1972*. Halaby's goal: Improve GA safety by relying on cooperation rather than threats of punishment.

Addressed "Dear Fellow Airman," Halaby called on all active airmen to share their ideas. He was willing to hear complaints, he said, but wanted more than "just their gripes." And, airmen wrote back. Kent writes, "Many were harsh in their criticism of FAA; others were both thoughtful and constructive." To underscore his intention to improve relations with the GA community, Halaby met with Washington headquarters employees on March 6 to tell them that the feuding between FAA and various aviation groups was at an end. Halaby promised GA and pilot organizations "an open mind if not open arms."

Days later, Halaby initiated Air Share Fly-ins so he and other top FAA officials could meet with the GA community. In October 1961, 90 air share meetings were held throughout the nation on a single day. Kent writes that in a report to President Kennedy, Halaby said, "there are many misunderstandings ... that no amount of regulatory or rulemaking action can change." Only better communications would help. Kent notes that "FAA had already begun publishing a new safety magazine to fill part of this gap."

Shakespeare had it right when he wrote about what is past is prologue. Fifty years after Halaby's letter to airmen, FAA is again reaching out to the GA community under Administrator Randy Babbit's leadership and striving for better communications—through this publication, through the FAA Safety Team, and many other venues. Most importantly, the agency has set its sights on dramatically improving GA safety.

As the article on page 8 notes, Deputy Associate Administrator for Aviation Safety John Hickey is championing an ambitious, yet practical, strategy to reduce GA accidents. Instead of regulatory changes, FAA is focusing on working more closely with members of the GA community, including CFIs, type clubs, and aviation associations, such as AOPA and EAA, among others.

Most importantly, the agency has set its sights on dramatically improving GA safety.

When Halaby wrote to airmen 50 years ago he said, the "responsibilities inherent in aviation fall not only upon those of us in government, but also upon all of you who are members of the aviation community."

Those words are just as true today. Yes, we in government will do our part. Yet, it is by working together and keeping our focus on our shared goal of safety that we can make GA safer than ever. This is how we will make even more progress over the next 50 years of aviation.

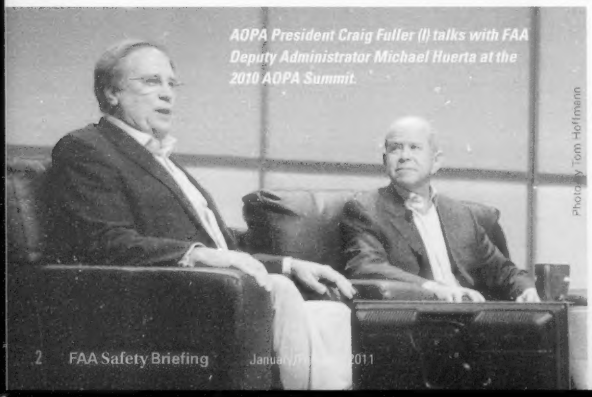
ATIS Aviation News Roundup

Safety Soars at AOPA Summit

Thousands of pilots, vendors, and aviation enthusiasts gathered Nov. 11-13 for the Aircraft Owners and Pilots Association (AOPA) Summit, held this year in Long Beach, Calif. The summit's predominant focus was the future of GA and finding solutions to address a shrinking pilot population. In addition to a series of industry updates and product demos, summit attendees also enjoyed a wide array of educational seminars, covering everything from mastering takeoffs and landings to dealing with aircraft maintenance "gotchas."

The FAA had a strong presence at the summit, with FAA Safety Team representatives providing onsite Web site assistance with www.faasafety.gov and the WINGS program. The manager of FAA's Aerospace Medical Certification Division, Dr. Warren Silberman, led an informative forum on medical certification from the FAA's perspective. He mentioned that the agency's Medical Support System will be transitioning to an Internet-based platform, which will aid in reducing system down time and streamline the processing time for cases from the FAA regions and Oklahoma City.

On day two of the summit, FAA Deputy Administrator Michael Huerta updated attendees on some of the FAA initiatives supporting GA safety. "What we're looking at now as an agency are a range of non-regulatory approaches to safety improvement that you will hear about in the near future," Huerta said. He also commented on the new aircraft re-registration process that began Oct. 1, 2010, and will purge as many as 100,000 bad records. "The enhanced accuracy of this system will provide security benefits to all users of the aircraft registry," Huerta said.



AOPA President Craig Fuller (l) talks with FAA Deputy Administrator Michael Huerta at the 2010 AOPA Summit.

Photo by Tom Hoffmann

FAA Issues NPRM on Pilot Certificate Photos

On Nov. 18, 2010, the FAA issued a notice of proposed rulemaking for a rule that would require all pilot certificates to include a photo of the certificate holder. This action follows a requirement of the Intelligence Reform and Terrorism Prevention Act that all pilot certificates be made of plastic and contain a photo, a hologram, and an ultraviolet-sensitive layer, to prevent tampering, altering, and counterfeiting.

"The Department of Transportation is committed to keeping the traveling public safe," said Transportation Secretary Ray LaHood. "This is an important safeguard to help make sure individuals can't pose as pilots, whatever their intentions."

The proposed change includes both a phased-in and trigger-based implementation approach. Trigger events would leverage times when a pilot would normally need to interact with the FAA, like applying for a new certificate or rating. Not all pilots will have a triggering event during the implementation period, which varies for different kinds of pilot certificate holders within a 5-year time frame following the effective date of the final rule. The FAA also proposes a phased approach for requiring photo certificates. Airline transport pilot (ATP) certificate holders would have three years after the effective date of the final rule to comply, while those with commercial pilot certificates would have four years. A private, recreational, or sport pilot certificate holder—those least likely to have regular contact with the FAA—would have five years to get a new photo certificate. Pilots who do not obtain a photo certificate during the appropriate period would not be able to exercise pilot privileges after the cut-off date.

New certificates would have a photo expiration date of eight years, after which pilots must resubmit a photo and receive a new certificate. A photo expiration date will be posted on the certificate as a reminder.

FAA proposes to charge a $22 processing fee for the new photo certificate, which is comparable to drivers' license fees in many states. In certain cases, the rule would also require pilots to apply for a new or replacement pilot certificate in person at a Flight Standards District Office (FSDO) or FAA designee. Currently, the FAA operates 96 FSDOs in the United States and has approximately 2,700 designees worldwide who can process applications for pilot certificates with a photo.

The requirements for the photo are consistent with the U.S. Department of State's guidelines for passport photos, so applicants can obtain them from any passport photo vendor. Currently only hard copy photos are accepted, but the FAA anticipates accepting digital photos in the future.

The NPRM is on display on page 70871 in the Federal Register, vol. 75, No. 223 at www.gpoaccess.gov/fr/. Comments will be accepted until Feb. 17, 2011.

Compliance Modifications for Terra/NARCO Transponders

In 1994, the FAA Air Traffic Organization (ATO) discovered a communication problem with certain aircraft transponders that were not displaying properly on ATC radar. The problem was traced back to a specific unit, Terra Corporation's model TRT-250 Air Traffic Control Radar Beacon System (ATCRBS) transponder, but was also found later in a NARCO Avionics model AT-150 transponder. While the manufacturers of both transponders have since made modifications and issued FAA-approved service bulletins to correct the problem, the FAA suspects there are still several unmodified NARCO or Terra transponders in service in experimental homebuilt aircraft and gliders, as well as in a number of type-certificated aircraft.

If your NARCO AT-150 transponder has a serial number between 10000 and 12598, check to see that it is in compliance with the service bulletin issued by NARCO (www.narco-avionics.com). If you have a Terra TRT-250 transponder, ensure it complies with Airworthiness Directive 95-01-01. Performing these modifications will help ensure your transponder achieves reliable detection and response to Mode S and Traffic Collision and Advisory System (TCAS) interrogations.

For questions, contact Terry Pearsall at FAA's NextGen Procedures Implementation Group (Terry.Pearsall@faa.gov).

UAS Research Flights Begin

On Oct. 12-15, 2010, a group of FAA student test pilots concluded eight weeks of Unmanned Aircraft Systems (UAS) operator training with a series of training/test flights at the Air National Guard's Warren Grove Gunnery Range. The course was undertaken as part of the FAA and Air National Guard Cooperative Research and Development Agreement (CRDA) with Insitu, Inc. on Insitu's ScanEagle unmanned aerial system platform.

Student pilots studied and evaluated the aircraft, ground control stations, launch and recovery systems, operating software, simulators, emergency response procedures, and UAS training materials in a collaborative environment. They also flew 10 search and reconnaissance missions with full aircraft launch and recovery operations for two ScanEagle aircraft, completed aerial photography of numerous stationary and mobile range targets, and performed several operational scenarios.

Analysis findings and recommendations will be shared with Insitu as part of the CRDA. The results of this research, and future test flights, will be used to identify and resolve Next Generation Air Transportation System regulatory challenges involving areas of UAS safety with other aircraft types in the NAS.

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FREDERICK E. TILTON, M.D.
FEDERAL AIR SURGEON

Aeromedical Advisory

Now Playing: CAMI's Human Factors Videos

You may not think of yourself as "liveware," but that is how human beings are incorporated in Elwyn Edwards' 1972 S.H.E.L. model that established the core areas of human factors research: **S**oftware, **H**ardware, **E**nvironment, and **L**iveware. S.H.E.L. is important in aviation since it was the first model to structure and articulate the concept that pilots and mechanics interact with aircraft systems, flight controls, and the operating environment. You can learn more about S.H.E.L. in the FAA Civil Aerospace Medical Institute's (CAMI) *History of Crew Resource Management* (CRM) video, which launches the new CAMI human factors video series.

This 50th anniversary issue of *FAA Safety Briefing* looks at the evolution of aviation safety. The new video takes a similar approach and describes how the science of human factors has evolved over the years and presents key conceptual models. In addition to S.H.E.L., the video showcases Professor James Reason's famous "Swiss cheese" model of human error, which posits that most accidents result from the cumulative effect of multiple small errors. According to Reason's model, an accident occurs only when holes in the operational safeguards line up to create the safety gap that leads to an accident.

S.H.E.L. was the first model to structure and articulate the concept that pilots and mechanics interact with aircraft systems, flight controls, and the operating environment.

Building on these models, a 1979 NASA workshop developed the CRM concept, now practiced by virtually every flight crew in commercial operations. S.H.E.L. also contributed to more recent work by CAMI researchers, including Dr. Douglas Wiegmann and CAMI alumnus Dr. Scott Shappell, who developed the Human Factors Analysis and Classification System (HFACS). HFACS helps researchers and investigators determine how and why errors happened and, more importantly, what we can do to avoid them in the future.

The Role of Stress

Have you ever wondered how perfectly capable pilots could land with the gear still retracted? Stress is one explanation, because it can render the pilot effectively deaf to the wailing sound of the gear warning horn. The second video in CAMI's human factors series covers *Stress in the Aviation Environment*. While stress can be an aggravation in a typical office job, it can be fatal in the aviation environment. The video distinguishes among levels of stress. Low levels of stress can be good and can help focus the mind and improve performance on almost any task. Too much stress, on the other hand, leads the brain to shut out some of the information it receives and can lead to errors.

Managing stress is key to good performance in today's complex aviation environment. Here are a few stress-management tips from the video:

- Review standard operating procedures to refresh knowledge and reaffirm your flight expectations.
- Use a checklist for consistency in flight procedures and to ensure you do not miss critical steps.
- Hold conversations with crewmembers, or with yourself if you are flying alone. Verbalization enables a more complete analysis of options.
- Use constant crosschecks to verify information and get early warning of system malfunctions.
- Rehearse, because practice makes perfect in any endeavor.
- Engage in "what if" planning for the worst case, which helps develop a fallback plan in case things do go wrong.

These videos are the first two in a series that will roll out over the next few years. To view them, please go to: www.faa.gov/library/online_libraries/aerospace_medicine/aircrew/hf_videos/.

Good health and safe flying!

Frederick E. Tilton, M.D., M.P.H., received an M.S. and an M.D. from the University of New Mexico and an M.P.H. from the University of Texas. During a 26-year career with the U.S. Air Force, Tilton logged more than 4,000 hours as a command pilot and senior flight surgeon flying a variety of aircraft. He currently flies the Cessna Citation 560 XL.

DR. WARREN S. SILBERMAN

Ask Medical Certification

Dr. Warren S. Silberman and his staff administer the aeromedical certification program for about 600,000 holders of U.S. pilot certificates and process 450,000 medical certification applications each year.

Q: My current medical certificate has expired. I submitted an application for a new third-class medical certificate, but my Aviation Medical Examiner (AME) is asking for more documentation on a medical condition I developed recently. May I continue to exercise sport-pilot privileges while this application is being processed?

A: This is an interesting question. If you had NOT applied for a current examination through the FAA I would say that you could. But since you now have a current examination that is "not issued," you cannot exercise sport-pilot privileges.

Q: I'm a 68-year-old Army veteran who lost quite a bit of my hearing ability on the job over the years. I get by with a hearing aid, but am afraid I might not pass the hearing test on the FAA medical exam. What should I do?

A: An airman must only pass one of three possible hearing tests and you are free to perform these tests wearing hearing aids. We also have airmen who are deaf, but they cannot fly into controlled airspace that would require radio communication. In our guide for AMEs we say, "The applicant must demonstrate an ability to hear an average conversational voice in a quiet room, using both ears, at a distance of 6 feet from the examiner, with the back turned to the examiner." A first step would be to try this at home with another person and see if you have any trouble.

Most AMEs do not have the capability to perform all the allowed hearing tests. If you were to fail the conversational voice hearing test, the AME should have you seen by an audiologist. He/she will likely perform the other two FAA acceptable tests (audiogram and speech discrimination test). If you pass one of these you can get certified without any restrictions. Some AMEs will allow you to visit them and request an evaluation prior to actually performing an examination to see if you would pass.

For more information, see the FAA's *Guide for Aviation Medical Examiners,* Application Process for Medical Certification, Examination Techniques, Item 49. Hearing: www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/app_process/exam_tech/item49/et/.

Q: Can you explain the FAA position on laser eye surgery?

A: The FAA accepts several FDA-approved procedures for vision correction, including LASIK. However, these corrective surgeries can have adverse effects, e.g., corneal scarring, worsening vision, or night glare, which could be incompatible with flying duties. The FAA expects that a pilot will not resume piloting aircraft until his/her health care professional determines that the post-operative condition has stabilized, there have been no adverse effects or complications, and the pilot meets the appropriate FAA vision standards. If these determinations are favorable and the pilot is otherwise qualified, he/she can immediately resume piloting. However, the pilot must ensure that the treating health care professional documents his/her determinations in the pilot's treatment record. A copy of that record is immediately forwarded to FAA's Aerospace Medical Certification Division, and the pilot retains a personal copy.

Send your question to SafetyBriefing@faa.gov. We'll forward it to Dr. Silberman without your name and publish the answer in an upcoming issue.

For more information, see the FAA's *Guide for Aviation Medical Examiners,* Application Process for Medical Certification, Exam Techniques and Criteria for Qualification, Items 31-34. Eye - Refractive Procedures: www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/app_process/exam_tech/et/31-34/rp/.

Warren S. Silberman, D.O., M.P.H., manager of FAA's Aerospace Medical Certification Division, joined FAA in 1997 after a career in the U.S. Army Medical Corps. Silberman is Board Certified in Internal Medical and Preventive/Aerospace Medicine. A private pilot with instrument and multi-engine ratings, he holds a third-class medical certificate.

GA SAFETY MILESTONES – 1961 TO 2011

THE EVOLVING ART

CELEBRATING 50 YEARS OF

As you probably noticed with this issue's throwback cover, *FAA Safety Briefing* is celebrating something very special: our 50th anniversary! That's right. Predating the Department of Transportation (established in 1967) and only three years after the Federal Aviation Agency was created in 1958, for a half century this magazine has kept readers like you informed about aviation safety.

Glancing at the headlines of some the publication's earliest issues, it is interesting to see what made news back then. Like opening an aviation time capsule, the sepia-toned photos of pilots with slicked-back hair and horn-rimmed glasses and diagrams of now-obsolete airspace configurations evoke a sense of nostalgia. As I read these early issues, I began to realize something. The pictures may be weathered and the technology out of date, but the core message of safety awareness was as strong as it is today.

The Numbers Tell the Story

A lot can happen in 50 years, especially in a dynamic industry like aviation. Since 1961, aviation has grown significantly and taken its place as one of the nation's major transportation players. GA has been a big part of that growth, with U.S. manufacturers reaching a peak of producing around 17,000 GA aircraft per year between 1977 and 1979, according to the General Aviation Manufacturers Association. Pilot growth has been steady as well, increasing more than 40 percent over the last 50 years to nearly 595,000 pilots in 2009.

Even with this dramatic growth in pilots and planes, safety has always been paramount as GA safety statistics indicate (see Fig. 1). Despite a temporary uptick in the 1960s, GA accident numbers have decreased steadily all the way to today. NTSB data shows that the fatal accident rate per 100,000 flight hours was 3.13 in 1961, 135 percent greater than the 2009 fatal accident rate of 1.33 per 100,000 flight hours. The total number of GA accidents has also declined—from 4,625 accidents in 1961 to 1,474 in 2009, a 68 percent reduction.

"In the early years, this positive result for improving GA safety had a lot to do with

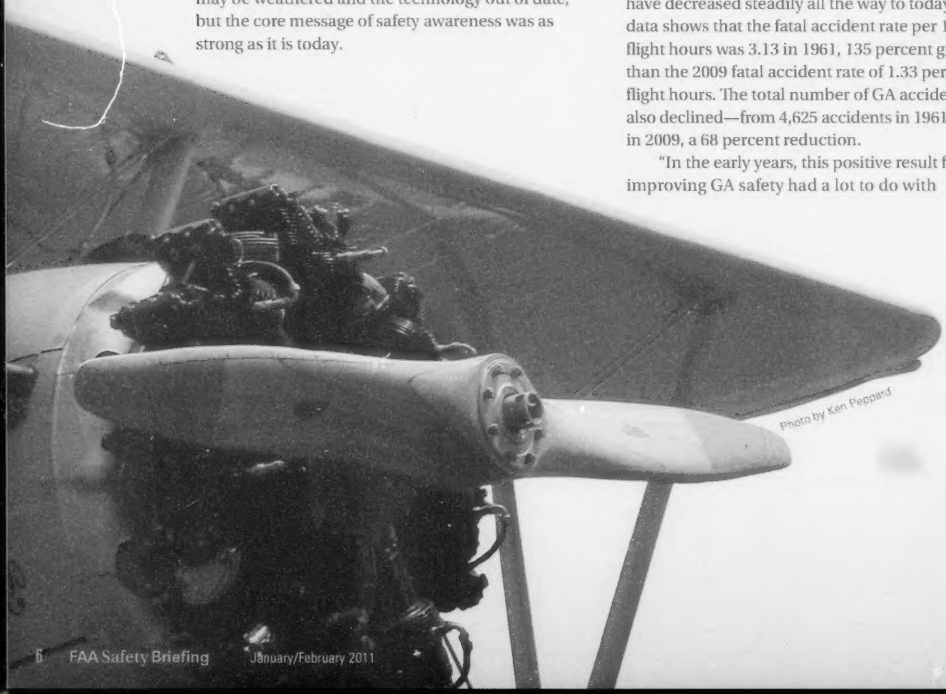


Photo by Ken Peppard

improvements in engine technology, ATC, and weather services," says Bob Matthews, senior aviation safety analyst with the FAA Office of Accident Investigation and Prevention. "But over the long run, you can attribute the success to the long-term incremental improvements a good regulatory structure provides. You may not perceive any big movements at the time [a law or regulation is published], but you look back 10 years and see some major changes."

Some of the noteworthy achievements and events of the last 50 years that have helped improve GA safety include:

- 1961: FAA launches air share program. FAA officials meet with the GA community in a series of hangar sessions. These meetings give airmen the opportunity to air their views and learn about the safety benefits of improved rules. In October, FAA holds 90 air share meetings throughout the nation on a single day.
- 1971: FAA creates National Accident Prevention Program, predecessor of the FAA Safety Team (FAASTeam), designed to prevent GA accidents through airman education.
- 1976: GA aircraft required to install ELTs.
- 1994: The GA Revitalization Act spurs growth of aircraft production by lowering product liability faced by manufacturers. FAA approves civilian use of GPS for aerial navigation.
- 2000: President Clinton directs that Selective Availability be turned off on May 1. This vastly improves the accuracy of GPS signals available to civilians.
- 2003: Wide Area Augmentation System (WAAS) becomes operational, providing greater reliability for WAAS-certified GPS receivers. WAAS improves the accuracy of GPS position information by removing errors in the signal and enables instrument precision approaches to runways with no instrument landing system.

The pictures may be weathered and the technology out of date, but the core message of safety awareness was as strong as it is today.

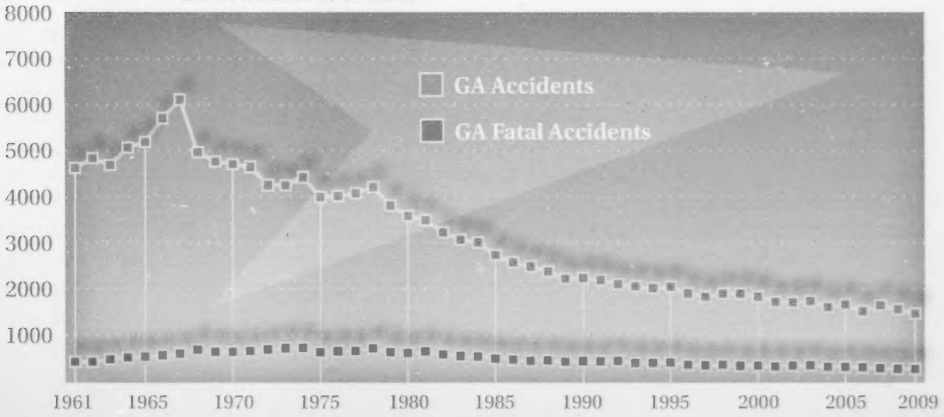


Fig. 1

Looking Ahead to the Next 50 Years of General Aviation Safety

In this issue we celebrate the 50th anniversary of *FAA Safety Briefing* by looking at what we all—FAA and the general aviation community—have accomplished over the last half century. During this time, the GA safety record improved significantly.

"We have come a long way from the 4,625 GA accidents recorded in 1961," says John Hickey, FAA deputy associate administrator for Aviation Safety, "but we are far from satisfied."

"As an agency and as a community we can and must do better," Hickey adds. "New technologies in aircraft, avionics, and the Next Generation Air Transportation System will play a role in improving safety," Hickey explains. "But, the most important role will remain based on the human element—FAA safety professionals, including field inspectors, engineers, and FAA Safety Team members, working across the GA community with pilots, flight instructors, aviation maintenance technicians, and others."

Hickey is championing an ambitious, yet practical, strategy to reduce GA accidents and improve safety. It includes a number of elements, but its linchpin, and essential first step, is starting with a clear identification of the problem: the top 10 causes of GA accidents and the key contributing factors to those causes.

"The next step, which is currently underway, is developing intervention strategies to address the areas of highest risk," Hickey adds.

The FAA is not looking to implement regulatory changes. Instead, the agency anticipates that many significant safety improvements can be gained through outreach efforts, such as working more closely with CFIs, type clubs, and aviation associations, such as the Aircraft Owners and Pilots Association and the Experimental Aircraft Association.

"General aviation includes hundreds of thousands of aircraft operating from thousands of public-use and commercial carrier airports," Hickey says. "GA pilots, aviation maintenance technicians, and others are the foundation of our nation's aviation system.

"It is incumbent on the FAA, as the steward of the public trust, to make GA as safe as we can," Hickey adds. "I am committed to improving GA safety and look forward to working with our employees and the GA community to meet that challenge."

- 2010: FAA publishes rule requiring aircraft operating in controlled airspace be equipped with Automatic Dependent Surveillance-Broadcast (ADS-B), one of the key Next Generation Air Transportation System technologies, by 2020. The rule also includes ADS-B performance requirements.

As a constant player in the 50-year positive trend for GA safety, *FAA Safety Briefing* has played an active role in improving safety. Today, the magazine remains an effective communications tool whose objective aligns directly with the FAA's performance goal to reduce GA fatal accidents.

The agency's commitment to providing safety outreach was clear from the start. In a 1961 letter to the Bureau of the Budget, then-Administrator Najeeb Halaby stressed the importance of having a communication tool like *FAA Safety Briefing* to encourage and foster the development of civil aviation. "Understanding is crucial to our mission," Halaby writes. "We plan to publish a magazine which will not only tell what we are doing, but why—it will set our actions and policies in the proper perspective."

Over the years, several well-known aviation figures have contributed to *FAA Safety Briefing*, including aerobatic champions Sean Tucker and Patty Wagstaff, aviation author and humorist Rod Machado, and Experimental Aircraft Association founder Paul Poberezny. In addition, the magazine has had the privilege of profiling such aviation legends and pioneers as test-pilot General Chuck Yeager, aircraft designer Clyde Cessna, and the father of vertical flight, Igor Sikorsky.

My, How Things Have Changed

While remaining true to its original safety mission, *FAA Safety Briefing* continues to evolve. Originally known as *Aviation News*, the magazine grew from a simple 4-page black-and-white newsletter to its current format, a 32-page (or more) full-color magazine, also available online. As illustrated by its new name, introduced in 2010, the FAA has also fine-tuned the presentation and content to keep airmen abreast of safety-critical topics and to be more responsive to reader feedback and questions. Also, *FAA Safety Briefing* recently adopted focused themes for each issue to concentrate on individual topics and serve as reusable resource guides.

With the majority of her 38-year FAA career serving on the magazine's staff, recently retired

associate editor Louise Oertly is no stranger to its evolution. "A 50-year production run is a major accomplishment," says Oertly, "but that would not have been possible without being able to truly understand and adapt to the audience's needs."

Today, better understanding and adapting to reader preferences has never been more important and is a key tenet to future success in preventing accidents and saving lives. In addition to expanding its traditional outreach methods, the magazine began a foray into the world of social media. The *FAA Safety Briefing* staff now regularly sends "tweets" to update followers about special events or breaking aviation safety news. If you have not already signed up to follow us on Twitter, use @FAASafetyBrief or go to www.twitter.com/FAASafetyBrief.

The magazine is also enhancing its Web site presence on www.faa.gov/news/safety_briefing/ and working more closely with the FAASTeam. "The future of GA safety is happening now as we move more toward satellite-based technology," says FAASTeam national outreach manager Bryan Neville, "and having a robust and forward-looking communication strategy to support that plan is a must."

Technology is advancing at an exponential rate and will no doubt fundamentally change how aircraft operate and the way we fly. What GA will look like 50 years from now no one knows. But, wherever the future takes us, there will always be a need for communicating safety, a role that *FAA Safety Briefing* will enthusiastically fulfill.

Tom Hoffmann is associate editor of FAA Safety Briefing. *He is a commercial pilot and holds an A&P certificate.*

Did you know that in 1961...

- there were 76,549 active civil GA aircraft compared with 223,877 active GA and air taxi aircraft today.

  Sources: *FAA Statistical Handbook of Aviation*, 1961 Edition; FAA General Aviation and Part 135 Activity Surveys - CY 2009.

- there were 348,062 active certificated pilots compared with nearly 595,000 today.

  Sources: *FAA Statistical Handbook of Aviation*, 1961 Edition; *FAA Aerospace Forecast, Fiscal Years 2010 – 2030.*

- there were 115,688 active certificated mechanics compared with 370,416 mechanics and repairmen today.

  Sources: *FAA Statistical Handbook of Aviation*, 1961 Edition; FAA U.S. Civil Airmen Statistics, 2009.

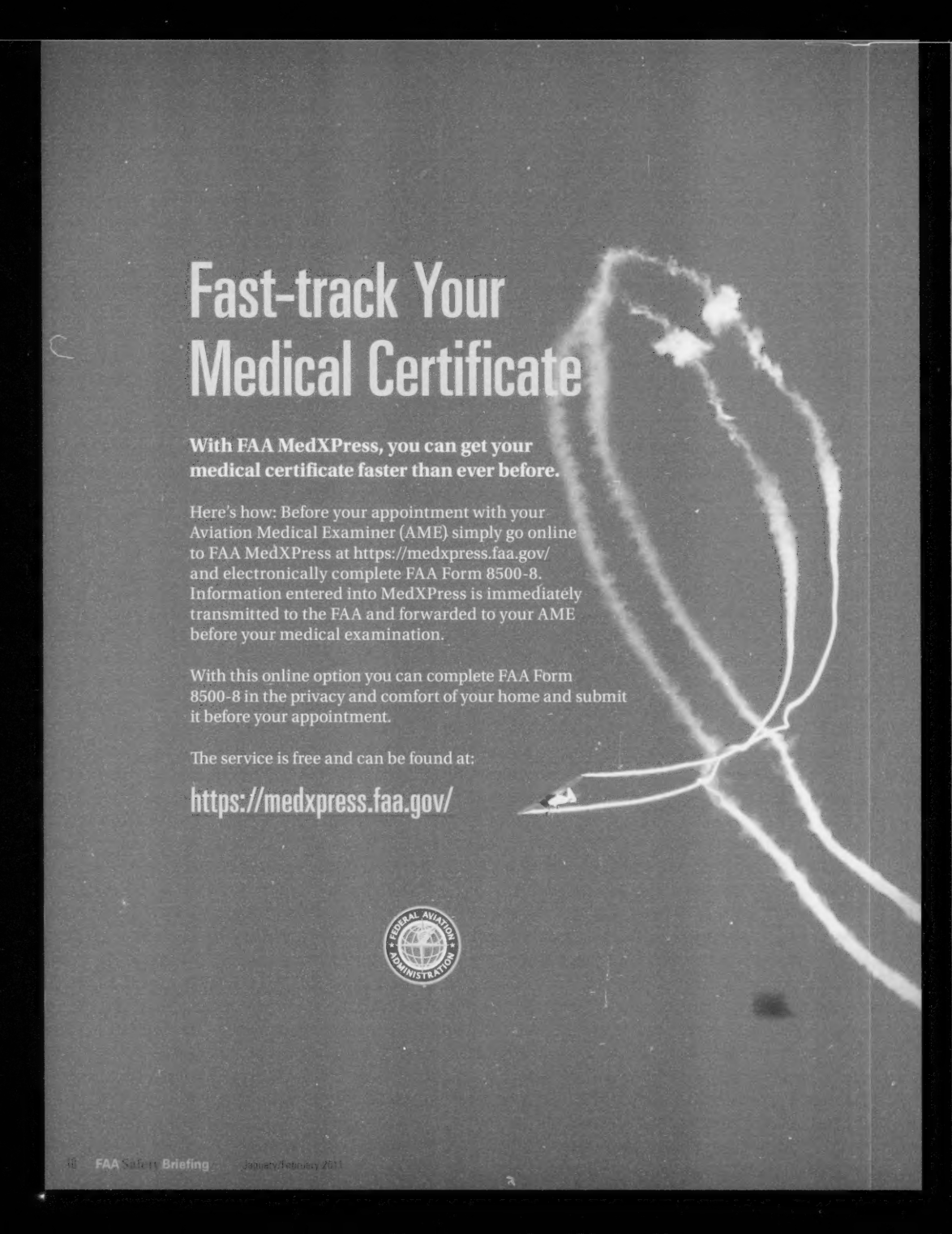
- U.S. manufacturers shipped 6,778 new GA aircraft compared with 1,587 in 2009.

  Source: General Aviation Manufacturers Association.

- GA aircraft models with the highest production rates were the Piper PA-22 Colt (1,173 airplanes), the Cessna 172B *Skyhawk* (903 airplanes), and the Cessna 182 (575 airplanes).

  Source: General Aviation Manufacturers Association.

Photo by Ken Pepperd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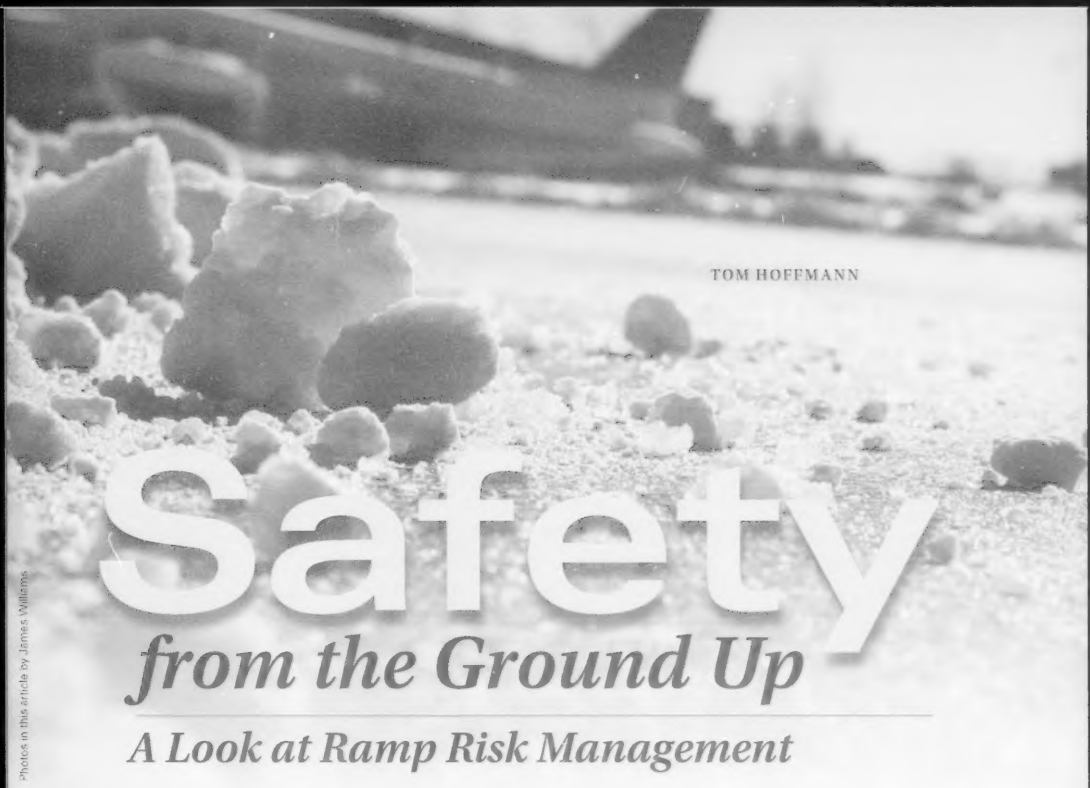


TOM HOFFMANN

Safety *from the Ground Up*

A Look at Ramp Risk Management

Photos in this article by James Williams

Preparing for a flight takes a good deal of planning and coordination. It involves everything from factoring in fuel requirements and weight and balance information to researching weather and any NOTAMs or TFRs that may affect your flight. With so much to do—often under the duress of multiple time constraints—it is easy to overlook another important component of a safe flight: ground safety.

If you have seen images of cargo containers sucked into jet engines, you know how dangerous an airport ramp can be. While GA airports are not typical places to find 100,000-lb.-rated turbofans capable of ingesting nearly anything in sight, there are numerous hazards of which you should be aware. Some of these can put you at risk well before you even reach your airplane. This article provides advice on how to avoid ramp accidents and ensure that your next flight is safe from the ground up.

It All Starts at Home

On the morning of a long-awaited weekend flight, it is uncanny how events seem to conspire against getting started on schedule. Whether it is missing car keys, refereeing a pop-up family squabble, or a last-minute scramble to find your pilot certificate, distractions can leave you little free time to focus on important preflight duties.

Instead of reviewing the latest weather data or fine-tuning details of your flight, you are now stressed and rushing to get to the airport on time. This harried pace may cause you to skimp on a detailed preflight inspection, which can be a deadly mistake. Being in a hurry can also quickly contribute to a lack of awareness, one of the most common causes of accidents and incidents on the ramp.

Just as a good pilot "stays ahead" of the airplane during flight, it is also good practice on the ground. Anticipate distractions and build in extra time the day of your flight to address them. Prepare maps, charts, and flight planning documents the day before your flight. You may even want to lay out your clothes, stuff snacks in your flight bag, and mentally review what you will need to do the day of your flight. Taking care of small tasks in advance can make the difference in setting up a safe, smooth, and distraction-free start to your flight.

Clothes Make the Pilot

Sometimes ground safety can be as close to us as the clothes on our backs. Matching your attire with the weather offers several benefits. On cold, blustery winter mornings I have often regretted not having worn an extra layer of clothes or a pair of good insulated gloves, especially as icy drops of avgas splash on my hands during fuel inspection. Cold hands can make for an uncomfortable preflight and may cause some pilots to speed through their checks.

Remember, that while it is good to keep your mitts covered up, you may still need bare skin to check for frost on the airframe or to inspect areas where bulky gloves might inhibit access. Also, remember proper shoes. Especially in winter, slippery hazards, such as oil, fuel, and other aircraft fluids, are "rampant" at airports. These hazards, coupled with or sometimes obscured by snow and ice, can make for a treacherous stroll from the FBO to the aircraft. A slip-resistant shoe or boot will provide the needed extra traction.

Air Traffic Safety Day

FAA's concern for ground safety goes beyond pilots and mechanics. On January 27, 2011, the agency's Air Traffic Organization (ATO) Office of Safety will host a nationwide Safety Day campaign to promote safety and health both on and off the job for the ATO workforce. The event, "Safety from the Ground Up," will feature messages from ATO COO Hank Krakowski and other guest speakers and showcase several new training videos. ATO employees will be able to view the event via live Webcast.

Another preflight clothing consideration may depend on whether you plan to be involved with fueling. Materials like nylon, Dacron®, or wool are especially prone to accumulating and discharging static electricity. As fun as it may be to zap an unsuspecting victim, offloading excess electrons around a fuel source may elicit a more volatile reaction.

Exercise extreme care when you are in close proximity to fuel. Bonding, or connecting yourself to a conductor, is the best way to equalize an electrical charge. That means, in addition to ensuring the aircraft and any fueling equipment are grounded, grab onto a metal piece of the aircraft for a few seconds to balance any excess charge you or your clothing have gathered. You might be surprised how much static a typical winter jacket can accumulate. Think twice before removing that jacket anywhere near a fuel source. Anyone who has experienced a powerful shock after taking off and hanging up a wool coat can only imagine how that might play out with fuel vapors present.

On the topic of fuel safety, there is another unlikely source of static electricity that can be extremely dangerous: pouring avgas from or into plastic containers. Placing an avgas-approved container on the ground before filling and using an electrically conductive filter can eliminate static build-up created by pumping or pouring fuel. To remove static build-up on the container's exterior, wipe any spilled fuel from the container with a damp cloth.

No Fooling with FOD

One of the biggest enemies of aircraft on the ground is foreign object debris, or FOD. Often as small as a bolt or a misplaced screwdriver, these hard-to-see and unassuming hazards can wreak havoc on an aircraft, causing tire blow-outs, cracked windshields, propeller damage, and more. Before your flight and while taxiing, keep a constant eye out for anything that is out of place. Secure and dispose of the object if possible, or communicate to any available airport personnel about the FOD hazard.

This excerpt from an Aviation Safety Reporting System (ASRS) report shows how easily a lack of awareness can lead to mistakes, especially when FOD is involved:

> *During a preflight inspection with a first-time flight student, both the instructor and student used a collapsible ladder to check the fuel tanks*

of a Cessna 172. Distracted by the student's numerous questions, the instructor lost track of the ladder and did not notice it had been placed forward of the right wing. After engine-start and completing the preflight checklist, they began taxiing in a right turn when the right gear and propeller immediately struck the forgotten ladder, cutting it to pieces.

Fortunately, no one involved in this incident was injured. The aircraft suffered minor damage (I can't say the same for the ladder). Student and instructor both learned a valuable lesson about losing awareness of their environment.

To avoid overlooking any FOD, stand back after preflighting and carefully examine the aircraft from a distance. It also allows you to get a big picture of your aircraft, i.e., checking the symmetry of the flight controls and the overall integrity of the airframe. Another tip is to take a walk around your aircraft, which may also be a last chance to catch those critical Remove Before Flight safety covers. It only takes a few seconds, but this final glance can help you see things that are hard to catch up close.

Let's Get Totally Clear!

Sadly, some ramp accidents involving people are not much different from how the ladder fared in the ASRS report. The culprit here is another insidious foe: a moving propeller.

During my first flight lesson I was baffled by the instructor's direction to open the aircraft window and scream "Clear!" to an otherwise deserted airport ramp. But once the engine roared to life, I quickly realized the power of the 72-inch metal blade spinning inches in front of me. Not that I could see it. Rotating at 1,000 rpm, the propeller was little more than a translucent gray blur.

Despite verbal warnings, the use of beacon lights to signal that someone is running or about to start an engine, and even the sheer noise of the engine, government data show that each year people are injured or killed by walking into a moving propeller. If you have passengers who may not be familiar with airport ramp hazards, be sure to advise them to stay clear of any aircraft with an engine running or one with strobe and/or beacon lights on. This is especially important at night when a spinning prop can be easily cloaked in darkness.

A final note on propellers: Always treat a prop as if the magneto were hot, or, in other words, with the engine able to start with a pull on the prop. Never lean against a prop. During inspection, ensure the ignition is in the off position.

Towing the Line

Sound ramp safety practices do not only apply before takeoff. After your safe arrival comes the tricky matter of parking your aircraft. Ask for help if you are unfamiliar with parking procedures. A tow bar can be a big help getting into a tight spot, but make sure you are familiar with how to use it. Connecting a tow bar incorrectly can damage your aircraft and could cause you serious injury. Whenever possible, have someone assist you when positioning an aircraft into a parking spot. The extra set of eyes will help you steer clear of other aircraft and keep you from straining your back.

Ramp accidents do not always get the same attention as other types of accidents, which makes it even more important to take steps to avoid them. By keeping a vigilant eye to your surroundings, taking precautions as needed for the environment, and properly following procedures, you will help keep yourself safe both in the air and on the ground.

Tom Hoffmann is associate editor of FAA Safety Briefing. *He is a commercial pilot and holds an A&P certificate.*

For More Information

FAA Advisory Circular 150/5380-5B – Debris Hazards at Civil Airports
www.faa.gov/airports/resources/advisory_circulars/media/150-5380-5B/150_5380_5b.PDF

FAA Advisory Circular 150/5210-24 – Airport FOD Management
www.faa.gov/documentLibrary/media/Advisory_Circular/150_5210_24.pdf

Aeronautical Information Manual – Chapter 4, Section 3-23, Use of Aircraft Lights
www.faa.gov/air_traffic/publications/ATpubs/AIM/Chap4/aim0403.html

SUSAN PARSON

Building Blocks and Safety Circles

Photo © Jason Wilkins

There are many jokes about how airplanes of any size can legally fly only when the weight of the paperwork equals the weight of the airplane. It can appear that way sometimes, giving rise to the idea that if you adhere faithfully to all the rules and regulations for flying, you will be safe.

In an ideal world, it really would be that simple. But as you have likely discovered, we do not live, work, or fly in an ideal world. Think about it in terms of a practical example of one of my students. As required by school rules, he carefully checked the Cessna 152's maintenance and airworthiness records before heading out to the airplane. All maintenance and airworthiness paperwork was in apple-pie order.

Reaching the plane, my student discovered a sheen of oil on the nosewheel fairing. When he bent down for a closer look, he noticed that it was fresh and growing larger from the steady drip-drip-dripping of oil droplets escaping from somewhere in the engine compartment. While he had established compliance with the paperwork and maintenance and airworthiness service requirements, my student correctly concluded that a bleeding airplane was not in a condition for safe flight. We went back inside for coffee, and wound up using the scheduled lesson time to discuss safety rules, safety realities, and the concept of safety risk management.

Bricks and Mortar

There is no question that following regulations is a vital part of aviation safety risk management. The macabre truth is that many regulations evolve from serious or fatal accidents—prompted by known safety considerations. The rules, therefore, provide an essential foundation for aviation safety. They are meant to direct the pilot's path *toward* practices that contribute to safe operation and *away* from activities that undermine it.

The problem is that while regulations are necessary they are not sufficient in and of themselves. They offer comprehensive and sometimes exquisitely detailed treatment of individual issues. Still, regulations are simply not designed to cover the nearly infinite number of possible combinations of situations that can undermine safety. In this respect, regulations alone are like bricks without mortar.

Enter the system-safety approach. The term is admittedly abstract and it has a formal (and somewhat formidable) official definition. But, as the characters repeatedly assert in the slapstick *Airplane!* movies, "that's not important right now." To make the concept more concrete, think of system safety as the mortar needed to bind individual regulatory bricks together and build a sturdy barrier to accidents.

You know about the bricks, so let's focus on the mortar. A system can be defined as a combination of people, procedures, equipment, facilities, software, tools, and materials that operate in a specific environment to perform a specific task or achieve a specific purpose.

GA flight operations clearly constitute a complex system with many variables:

- *Pilots* have different levels of knowledge, skill, experience, ability, and discipline.
- *Procedures*, such as instrument approaches, can be very complex.
- *Equipment*, airframes and avionics, is changing rapidly.
- *Services*, such as those provided by airports and air traffic control, vary widely and will change significantly as Next Generation Air Transportation System technologies are deployed in the national airspace system.
- The *flight environment*, including weather, is a critical factor in the safety of every flight.
- *External factors* can have a substantial impact, especially if the pilot doesn't consciously recognize them.

Systematic Safety Management

A key part of the system-safety approach is risk management: a decision-making process designed to methodically identify hazards, assess the degree of risk, and determine the best course of action. To put risk management to work in your personal aviation safety system, you need to be familiar with some of the basic concepts:

- A *hazard* is a present condition, event, object, or circumstance that could lead or contribute to an unplanned or undesired event. For example, a ¼" nick in the propeller is a hazard.
- *Risk* is the future impact of a hazard that is not controlled or eliminated. Using the earlier Cessna 152 example, the oil leak is a hazard, but it becomes a risk if the airplane is flown.

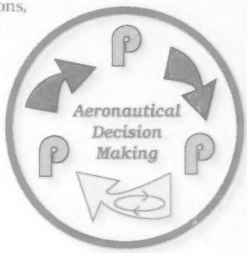
As shown in the risk-assessment matrix (Fig. 1), the level of risk posed by a given hazard is measured in terms of *severity* (extent of possible loss), and *probability* (likelihood that a hazard will cause a loss). Although not shown directly on the matrix, *exposure* (number of people or resources affected) can also be considered in assessing risk. The hazard presented by the nick in the propeller, in the example above, poses a risk only if the airplane is flown. If the damaged prop is exposed to the constant vibration of normal engine operation, there is a high risk it could fracture and cause catastrophic damage to the engine and/or airframe and, by extension, to the airplane's occupants. Using the chart, you can assess the level of risk as low, medium, or high.

PAVE the Way to Safe Operations

To make system safety and risk management more practical for real-world GA operations, the FAA Safety Team developed a simple three-step process:

1. *Perceive* the hazards listed on the well-known PAVE checklist:

- **P**ilot—experience, recency, currency, physical and emotional condition
- **A**ircraft—fuel reserves, experience in type, aircraft performance, aircraft equipment, e.g., avionics



RISK ASSESSMENT MATRIX

	Severity			
Likelihood	Catastrophic	Critical	Marginal	Negligible
Frequent	HIGH	HIGH	SERIOUS	MEDIUM
Probable	HIGH	HIGH	SERIOUS	MEDIUM
Occasional	HIGH	SERIOUS	MEDIUM	MEDIUM
Remote	SERIOUS	MEDIUM	MEDIUM	LOW
Improbable	HIGH	HIGH	MEDIUM	LOW

Fig. 1

- enVironment—airport conditions, weather (VFR and IFR requirements), runways, lighting, terrain
- External factors—allowance for delays and diversions, alternative plans, personal equipment

2. *Process* by referring to the matrix (Fig. 1) to evaluate the level and severity of the risk posed by the hazard you identified in step one.

3. *Perform* for safety by finding ways to eliminate or mitigate the severity, probability, and/or exposure of each of the identified hazards.

With consistent use, running through the three-P cycle can become a habit that is as smooth, continuous, and automatic as a well-honed instrument scan of cross-check, interpret, and control.

Susan Parson is a special assistant in the FAA Flight Standards Service and editor of FAA Safety Briefing. *She is an active general aviation pilot and flight instructor.*

For More Information

***Risk Management Handbook* (FAA-H-8083-2)**
www.faa.gov/library/manuals/aviation/media/FAA-H-8083-2.pdf

FAA *Flight Instructor Training Module* – Volume 2
www.faa.gov/training_testing/training/fits/training/flight_instructor/media/Volume2.pdf

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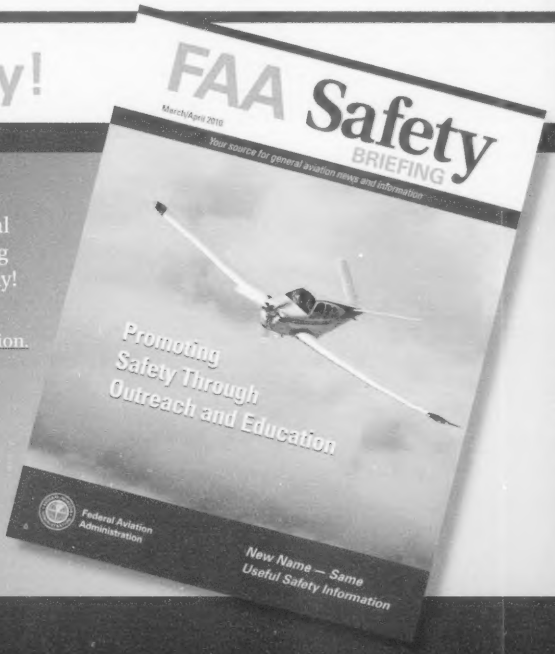
FAA Safety
BRIEFING
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Your source for general aviation news and information
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SUSAN PARSON

Checklist

Rising to the Challenge

I once received a copy of a major newspaper published on the day I was born. Inspired by this gift, I thought it would be interesting to see what happened in the aviation world in 1961, the year this magazine started. It did not take an extensive search to find the story of the first manned spaceflight by Russian cosmonaut Yuri Gagarin, whose *Vostok I* spacecraft made a 108-minute single Earth orbit in April of that year. It seems fitting that, in the year of *FAA Safety Briefing's* 50th birthday, further testing of the Scaled Composites Model 339 *SpaceShipTwo* suborbital spaceplane may bring space tourism—aviation's next frontier—closer to reality.

It's Not Just for Heroes

Though some might dismiss these exploits as examples of the daredevil mentality often ascribed to aviation's early days, nothing could be further from the truth. From Charles Lindbergh to Burt Rutan and beyond, the reality is that aviation's greatest achievements owe their success to careful planning that we now characterize as risk management.

You do not have to be setting aviation records to need risk management skills. On the contrary, the GA accident record attests to the need for every pilot to follow the think-of-everything example of aviation's high achievers. NTSB statistics attribute approximately 85 percent of aviation accidents in the last two decades to pilot error. The FAA's work to identify the top 10 GA accident causes and their major contributing factors already suggests that, in many cases, the outcome would have been happier if the pilot had acted with more forethought.

In an FAA-sponsored study of 4,000 pilots, half of whom were involved in accidents, researchers discovered that the accident-prone aviators had several characteristics in common, including:

- Disdain toward rules
- Personalities categorized as "thrill and adventure seeking"
- Impulsive approach to information gathering
- Disregard for or underutilization of outside sources of information

You can find more information on this study in the FAA's *Risk Management Handbook* (FAA-H-8083-2): www.faa.gov/library/manuals/aviation/media/FAA-H-8083-2.pdf.

The Prudent Pilot's Playbook

Over the next year, *FAA Safety Briefing* will focus more closely on GA accident causes, contributing factors, and, most importantly, what you can do to mitigate and/or prevent accidents. In the meantime, check out the FAA's *Risk Management Handbook*. Introducing the basic concepts of risk management, the handbook recognizes that risk management is unique to each individual, since no two people are exactly alike in skills, knowledge, training, and abilities. It offers practical tools that pilots at every level can use to systematically identify, evaluate, and reduce the risk posed by each flight. These include information on checklists; developing personal minimums; and scenarios for risk management, flight planning, and training.

... the reality is that aviation's greatest achievements owe their success to careful planning that we now characterize as "risk management."

The handbook also provides tips for managing workload, developing effective alternatives, and maintaining situational awareness. As you might expect, many of these techniques, e.g., the ability to concentrate, manage workload, monitor, and multi-task, overlapped the traits common to the 2,000 accident-free pilots in the study mentioned above.

As the first and most important New Year's resolution for aviation, let us all rise to the challenge of remaining in the accident-free category.

Susan Parson is a Special Assistant in the FAA's Flight Standards Service and editor of FAA Safety Briefing. *She is an active general aviation pilot and flight instructor.*

DELLA SWARTZ

Small Cost BIG BENEFIT

A Look at Lifesaving Aircraft Safety Enhancements

When I worked at an airline, I wondered about the wisdom of issuing certain safety regulations, such as requiring fire-blocking seats. The rationale was to increase crashworthiness, but what was the point? The new regulations cost a lot to comply with, and crashes were inevitably fatal, right?

After I went to work at the FAA, the reasoning became clearer. My supervisor had a drawer full of aircraft accident photos. Pulling one out he would say, "This accident was survivable, but people died. Requiring (fill in the blank) would have prevented that."

Last year, the FAA's Alaskan Region completed a study of all 647 accidents in Alaska between 2004 and 2009. Of these, 97 were fatal causing 133 deaths. The team determined that about 75 percent of the fatal accidents were survivable. These findings led the team to highlight several potentially lifesaving equipment strategies.

It is important for GA pilots and aircraft owners to evaluate the available safety equipment and make decisions based on cost and effectiveness. It may surprise you to know that many highly effective equipment strategies to increase crashworthiness are relatively inexpensive.

Here are a few safety enhancement items you might consider.

Photo by James Williams

Shoulder Harnesses

The Alaska study showed that 20 of the 133 lives might have been saved by the use of shoulder harnesses rather than just lap belts. Shoulder harnesses distribute loads more evenly, which reduces internal injuries and helps keep an individual's upper body and head from hitting the instrument panel.

One accident in particular provides a compelling case for shoulder harnesses, especially in the passenger seats. In the crash of a de Havilland *Beaver* with nine onboard, the pilot and front-seat passenger had shoulder harnesses and survived. Of the six passengers in the back without shoulder harnesses, only one survived. Shoulder harnesses in the rear seats could have reduced the injuries, allowing the passengers to escape from the post-crash fire.

Where to get them. Many aircraft manufacturers, supplemental type certificate (STC) holders, and aircraft supply stores offer kits to retrofit shoulder harnesses in aircraft delivered without them. While a four- or five-point harness is best, it may be difficult or expensive to install. A three-point harness provides protection and is a less costly option. Remember that a shoulder harness must be installed and worn correctly to be effective. Find information on kits by aircraft make, kit manufacturers, and guidance on installation at www.faa.gov/aircraft/gen_av/harness_kits/.

How to install them. There are many STCs for shoulder-harness installations. It is possible in some aircraft to install shoulder harnesses with a field approval. See the FAA shoulder harness Web site for more information.

Cost. Many kits are available for under $500 per seat plus the cost of installation.

Inflatable Restraints

The Alaska study showed significant safety benefits from inflatable restraints, or air bags: 38 of 133 lives may have been saved. This is because, when used in conjunction with lap belts and shoulder harnesses, inflatable restraints reduce the flailing of limbs as well as the impact with hard surfaces that lead to serious injuries. Because aircraft inflatable restraints are installed directly in the shoulder harness or lap belt, they inflate away from rather than toward you. This means that smaller adults and older children, who do not need a car seat, can safely use them.

Where to get them. There are STCs to install inflatable restraints for many aircraft models. Search the STC database at http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgSTC.nsf/Frameset?OpenPage in the FAA's online Regulatory and Guidance Library for "inflatable restraints" or "air bags." Kits are also available for many light-sport and experimental aircraft models.

How to install them. Inflatable restraints require an STC to install in type-certificated aircraft. In most GA airplanes, inflatable restraints, which are usually installed in a shoulder harness but can also be installed in a lap belt, are only a little more complicated to install than a regular shoulder harness.

Cost. Kits are available for about $1,000 per seat plus the cost of installation. Note that the shoulder harness is part of the kit.

Helmets

Of the autopsy reports the Alaska team reviewed, all mentioned severe head injury as a cause of death. The team predicted that if helmets had been worn, 33 of 133 lives might have been saved. Pilots and passengers should wear a helmet during high-risk activity, e.g., off-airport operations, especially for two-seat aircraft that have a lot of aircraft structure in close proximity to the head. Get a comfortable helmet with a good fit so you will wear it. Consider helmets for rear seat passengers as well. Make sure the helmet is rated to protect your head from impact loads and that it is not simply a way to hold your headset in place.

Photo 1 (on page 20) illustrates a compelling case for the use of helmets. The pilot who was wearing a helmet walked away. The passenger who was not wearing a helmet was not so fortunate.

Where to get them. Aircraft crash helmets are available from most aircraft supply companies.

How to install them. No additional FAA approval is required.

Cost. Many are available for under $500.

Photo 1

Photos courtesy of NTSB

Photo 2

406 MHz Emergency Locator Transmitter (ELT) or Personal Locator Beacon (PLB)

The team's study of the Alaska fatalities showed that 12 of 133 lives may have been saved had the aircraft been equipped with a 406 MHz ELT or a GPS-based PLB. The November/December 2010 issue of *FAA Safety Briefing* (see page 23) includes an article about how 406 MHz ELT devices work. It shows how they can make the difference between being rescued in a couple of hours versus several days, particularly if you often fly over remote areas or areas with a lot of tree cover where a downed airplane is hard to see. In many cases, quick intervention by medical staff can make the difference between life and death.

Although a 406 MHz ELT is quite a bit more expensive than a PLB, it is also more effective. The 406 MHz ELT's extremely reliable G-switch is automatically activated when the pre-set crash loads are exceeded. Therefore, even if you are unconscious, the 406 MHz ELT will start transmitting. The battery life is also considerably longer for the 406 MHz ELT. In addition, since the 406 MHz ELT transmits to a geosynchronous satellite, it does not have to wait for a satellite to pass overhead before the signal is received. Finally, 406 MHz ELTs can be equipped with a remote activation switch. If you have the remote switch in your aircraft, you can trigger the ELT in the air as soon as you are aware that you need to make an emergency landing.

Look at Photo 2. Can you locate the helicopter? In this accident, it took almost 22 hours for the rescuers to locate the crash site. With a 406 MHz ELT or PLB the helicopter could have been located much faster.

Where to get them. Most aircraft supply companies sell 406 MHz ELTs. PLBs are also available at sporting goods stores and similar retailers.

How to install them. A 406 MHz ELT requires an STC for installation. PLBs require no additional FAA approval.

Cost. 406 MHz ELTs are available for $800 to several thousand dollars. Make sure you factor in the cost of antennas, mounting hardware, and installation. PLBs are available for between $100 and $300.

The Bottom Line is Safety

We tend to think of the bottom line solely in terms of monetary costs, but consider these numbers: For as little as $1,200 you can purchase a PLB and helmets for yourself and your passenger in a two-seat airplane. For a four-place aircraft, you can equip all four seats with air bags and purchase a 406 ELT for around $4,800 plus the cost of installation. It could cost a lot more to remodel your kitchen or take a family of four on vacation.

We all do much to operate our aircraft safely; no one wants to experience an aircraft accident. But despite our best efforts, the fact is that flying is inherently risky and accidents do happen. I hope we all continue to have many hours of accident-free flying ahead. But if the unexpected happens, you will not regret the money you spend now on crashworthy features for your aircraft. The lives you save could be your own and those of your family and friends who fly with you.

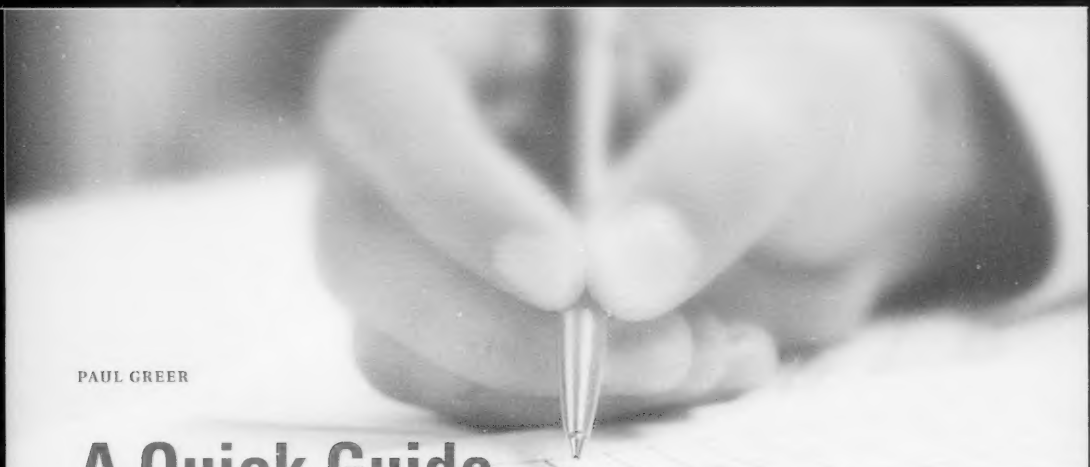
Della Swartz is an aerospace engineer at the FAA's Anchorage Aircraft Certification Office in Alaska. She soloed an airplane before she learned to drive a car and is part owner of an Aeronca Sedan.

For More Information

FAA's shoulder harness Web site
www.faa.gov/aircraft/gen_av/harness_kits/

FAA's Regulatory and Guidance Library
http://rgl.faa.gov/

FAA's STC database
http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgSTC.nsf/Frameset?OpenPage



PAUL GREER

A Quick Guide to Exemptions

"Oh, I hate these regulations! The people at the FAA couldn't possibly have been thinking about me or what I do when they wrote them."

How many times have you heard something like that (or perhaps something a bit more colorful) when a fellow aviator was discussing the regulations? I know I have and most of my FAA colleagues have as well.

The fact is that we develop regulations *because* we're thinking of you and a lot of people like you. Still, crafting regulations that apply to every person in every possible situation is not an easy task. The FAA recognizes that sometimes the regulations may not fit every particular circumstance. That's why the agency has a number of processes that may be able to provide some relief when specific regulatory requirements do not necessarily fit your situation.

Intrigued? Read on.

The primary regulatory process the FAA uses to provide relief is described in part 11 of Title 14 of the Code of Federal Regulations (14 CFR). While you may be familiar with those parts of the regulations commonly used by pilots and maintenance personnel, e.g., parts 43, 61, and 91, you have probably never looked at part 11. Titled General Rulemaking Procedures, part 11 is a relatively small part of the regulations. However, it contains some important provisions that address petitions for exemption.

A petition for exemption is basically a request for relief from the requirements of an FAA regulation. Any person who submits a petition for exemption must follow the procedures specified in part 11. These include demonstrating the relief requested would be "in the public interest" and "would not adversely affect safety, or provide a level of safety at least equal to that provided by the rule."

Waivers, Deviations, and Authorizations—Looking at All Your Options

Before we go into detail about exemptions, you should know that there are other ways not specified in part 11 to obtain relief. The FAA can, for example, issue a waiver, deviation, or authorization. Rules and FAA guidance outline the procedures for granting these forms of relief. Typically, a waiver, deviation, or authorization is for a specific operation and often for a short period of time.

For example, subpart J of part 91 outlines FAA policy for issuing waivers to that part. Section 91.905 provides a list of those specific rules for which the FAA (typically a Flight Standards District Office) can issue a waiver. You might be surprised to learn that the FAA can issue waivers for rules relating to aircraft speeds, minimum safe altitudes, operations in various classes of airspace, weather minimums, and communications requirements, to name just a few.

Remember, safety is the FAA's primary concern. If the FAA issues a waiver it must make a finding "that the proposed operation can be safely conducted under the terms of that certificate of waiver."

Let's take another example. Section 91.705, which addresses operations in Minimum Navigation Performance Specification airspace, contains specific provisions within the regulation by which the FAA can authorize a deviation, as long as certain requirements are met. Additionally, the FAA can permit other types of operations, such as passenger-carrying flights for compensation or hire under section 91.147, to be conducted under a Letter of Authorization.

By the Numbers

Because waivers, deviations, and authorizations do not require demonstrating that a request for relief is "in the public interest," it is often easier to obtain relief using these procedures than through the more complex exemption process. If, however, these types of relief are not available or applicable to your situation, you will need to follow the more formal exemption process.

Congress specifically granted the FAA authority to issue exemptions and, as noted, the agency has set forth the procedures it uses to issue exemptions in part 11. You may notice that part 11 is written in an unfamiliar format. This question and answer format, while different from that seen in most of the regulations, was used to help the public better understand the requirements for obtaining an exemption. It is also used in part 39 (airworthiness directives) and in subparts J and K of part 61 (sport pilots and flight instructors with a sport pilot rating). But please understand that the question and answer format makes part 11 no less regulatory than other parts of the regulations.

Before you file an exemption, consider other available options the FAA may grant: waivers, deviations, and authorizations.

How do you get an exemption? First, read part 11 carefully to be sure you understand (and follow!) all of the procedures. Section 11.81 lists the information you must include in your petition. In addition to providing your name and contact information, the petition must include:

- The specific regulation or regulations from which you seek relief
- What kind of relief you want, and the reason you want the relief
- Why granting your exemption would be in the public interest
- Why granting your exemption would not adversely affect safety, or how an equivalent level of safety would be provided

You will also need to provide a short summary of your request that the FAA can publish in the *Federal Register*, along with any additional information, views, or arguments available to support your request. If you want to exercise the privileges of the exemption outside the United States, you must also state why you need to do so.

By the Book

Sounds easy, right? Perhaps. But, the FAA does not take granting an exemption lightly. Here are some of the things you may wish to consider before submitting a petition.

First, the regulation from which you seek relief must apply to you or the person on whose behalf you are submitting the petition. Your petition should not ask the FAA to change a rule that applies to a broad range of people because that makes it a petition for rulemaking, which is a topic for another day.

Second, the regulation in question must actually regulate your activities. That sounds basic, but petitioners frequently fail to consider all the regulations that may cover the action(s) they wish to undertake. Often, the regulation a petitioner requests relief from is either not the correct regulation, or not the only one that applies. Although the FAA can frequently determine what regulations apply to your situation, it does not make our job any easier or, more importantly from your point of view, result in a quick disposition of your request.

Safety and Public Interest Are Key

Your petition must tell the FAA what you want to do, the relief you will need, and why you need it. Be specific and be comprehensive. If you leave

Photo by James Williams

something out, the relief granted may not cover everything you really need to do.

A critical part of the petition is telling the FAA why granting your exemption is in the public interest. Let me repeat: The exemption must be in the *public* interest, not yours alone. Saving your company money, increasing your bottom line, and generating a profit are all laudable goals, but they are not in and of themselves in the public interest. As required by part 11, the FAA needs to know how granting your petition benefits the public as a whole.

Another required step is to describe how granting your petition would provide a level of safety equivalent to that obtained through full compliance with the rule, or, alternatively, state how and why safety would not be adversely affected by granting the exemption. In practice, it is often difficult for a petitioner to state that non-compliance with a rule would provide an equivalent level of safety without taking additional actions. In such cases, the petitioner may propose taking certain actions that would compensate for not taking those actions specifically required by the regulation. Even if the petitioner does not propose them, the FAA may require a petitioner to take certain actions to achieve an equivalent level of safety, or it may limit the scope of relief granted. The formal term for these actions, which are listed in the exemption, is "conditions and limitations."

Help is a Mouse Click Away

The Internet has eased the petitioner's path considerably. The FAA provides instructions for submitting a petition for exemption at: www.faa.gov/regulations_policies/rulemaking/petition/. You can send your petition electronically via www.regulations.gov or, if you are like me and prefer U.S. mail, send your petition to: U.S. Department of Transportation, Docket Operations, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE, Washington, DC 20590. You should submit your petition at least 120 days prior to the date you need relief. If granting your petition would set a precedent, the FAA will normally publish it for comment in the *Federal Register*.

The FAA maintains a searchable database of all exemptions on which it has taken action at: http://aes.faa.gov. A quick records search will show you how the FAA responded to previous petitions, and if the agency acted on a petition similar to yours. Since the FAA treats similarly situated parties equally, you may want to use this database to look at the FAA's response to petitions similar to yours. You can see whether the petition was granted or denied, review a summary of the information provided by the petitioner, read the FAA's analysis, and learn what conditions or limitations the agency imposed if the exemption was granted. For recently submitted petitions, you can also access www.regulations.gov and use the docket number to conduct a further review of all (non-proprietary) supporting documents a petitioner submitted along with any public comments.

Safety and the public interest are key to the FAA's consideration of a petition for exemption.

Now the disclaimer: This article is meant to offer basic guidance on requesting regulatory relief. It does not constitute legal advice or a formal legal opinion. My goal is to help you understand that there is a process available to seek relief from a particular regulation. But, remember, just not wanting to follow a regulation is not sufficient justification for filing a petition for exemption.

As I said at the beginning, the FAA really is thinking of you and others like you when it develops regulations.

Paul Greer is a senior attorney in the Regulations Division in the FAA Office of the Chief Counsel. He is also a commercial pilot and flight instructor. He tries to follow the rules.

Photos by Tom Hoffman

WAYNE FRY

Ten Days

How the FAA Handles LOIs

This article's title starts with two words: ten days. Ten days is how long the FAA gives you to respond to a Letter of Investigation (LOI). An LOI is your notice that the agency is looking into some action you have taken or some work that you have done. Although not mandatory, most FAA Aviation Safety Inspectors (ASI) will send you an LOI if the evidence shows that a violation exists.

According to Order 2150.3B, FAA Compliance and Enforcement Program: *A letter of investigation (LOI) serves the dual purposes of notifying an apparent violator that he or she is under investigation for a possible violation and providing an opportunity for the apparent violator to tell his or her side of the story.*

The LOI is part of a process that you should know about. If it appears that a violation exists, FAA inspectors open an Enforcement Investigative Report (EIR). Relevant evidence and information—statements, records, photographs, etc.—is gathered to prove or disprove the apparent violation that precipitated the investigation. That evidence and information, along with the regulations that allegedly were violated, are placed in the EIR. If the evidence is sufficient to support a violation, the ASI recommends the appropriate action. If the ASI recommends legal enforcement action, the Order provides guidance to ASIs and other FAA employees on how to address regulatory violations.

The example in the article uses a repair station. However, individual pilots and mechanics, flight schools and maintenance training centers, among others, can all be inspected and receive a Letter of Investigation.

Mistakes Happen

Consider this scenario: You own a repair station that works on Thingamabobs. Your principal FAA inspector comes by for a visit and during a review of your work orders she notices you repaired a Widget 9000. Unfortunately, you are not rated to work on Widgets, only Thingamabobs. Your employees thought that the two devices were the same thing, so they brought in a Widget and repaired it.

After completing her inspection, the inspector makes a copy of the work order and discusses the issue with you. You assure her this was a one-time mistake and that it will not be repeated. The inspector tells you that she is concerned that your procedures did not adequately prevent you from working on the wrong item and says that she intends to issue an LOI.

While you wait for the expected LOI, take steps to ensure that your repair station will not make the mistake again. Because your repair station is not rated to do the work, the best you can do is to send the Widget to a properly rated repair station.

Then, the LOI arrives. It comes in a white envelope with a green receipt tag and reads something like this:

> *During planned surveillance of your repair station, it was noted that you maintained and approved for return to service a Widget 9000. Your repair station is not rated to maintain Widget 9000s. This is to inform you that the FAA is investigating this matter. We wish to offer you an opportunity to discuss the incident in person or submit a written statement within 10 days*

following receipt of this letter. Your statement should contain all pertinent facts and any mitigating circumstances you believe may have a bearing on the incident. If we do not hear from you within the specified time, we will process this matter without the benefit of your statement.

It does not sound good, but it offers you a chance to respond. And, you should respond. Let me repeat: You should respond. Note that the last sentence in the letter states that the FAA will proceed with or without your input.

Just the Facts, Ma'am

There are several reasons you should respond. First, responding shows a cooperative attitude, something FAA inspectors like to see. Second, it is possible that your answer will persuade the FAA to stop its action. Third, even if the FAA does not drop the case, you could provide facts that mitigate or reduce the sanction in this case.

If you choose to respond, you may want to seek legal advice. You may also decide that you need more than 10 days to develop an appropriate response. You or your counsel should request an extension within the initial 10-day period from the ASI who initiated the LOI. Chances are good that she will grant a reasonable extension.

What should you say in your letter to the FAA? In my work as an inspector, I have seen a wide variety of responses. While many include an outright plea for sympathy, the best tactic is to explain the facts. Most violations are inadvertent and if that is true in your case, say so.

As an inspector, I would like to know why it was inadvertent and what you have done to ensure that it does not happen again. For example, if you used a tool that has not been checked for calibration, tell me about the program you are putting in place to check for tool calibration. Explain how you will train your employees on the system. Describe what you are going to do about the aircraft/engine/part on which you used the tool. Furthermore, as the FAA and the aviation community move into safety management systems, it is helpful to outline the steps you are taking to look at your other processes, such as keeping your manuals current and your people properly trained.

Responding to an LOI shows a cooperative attitude and can provide the FAA with facts to possibly drop or reduce the extent of the violation.

Admittedly, this is a lot to do in 10 days. If you cannot accomplish it all, then include in your letter your plan for getting everything done. If the FAA continues to process the violation despite your best efforts, this information can be useful at an informal conference, but that is a topic for another article.

While this article is geared toward operations and maintenance violations, FAA guidance regarding the issuance of LOIs applies to all FAA programs that enforce regulations, such as those involving hazardous materials and drug and alcohol violations.

The moral of the story: It is in your best interest to be engaged in the process. Do not ignore the LOI. Help yourself by presenting the facts and, when appropriate, the fix. If your systems are not sufficient to prevent a repeat of the problem, change them. The bottom line is safety. That is the entire point of receiving an LOI as well as the role of FAA regulatory oversight.

Wayne Fry is an Aviation Safety Inspector currently assigned to the American Airlines Certificate Management Office in Ft. Worth, Texas. He has been with the FAA since 1997 and has worked in field offices, the Southwest Regional Office, and in the Aircraft Maintenance Division in Washington, DC. Fry is a mechanic, pilot, and experimental aircraft builder.

For More Information

Order 2150.3B, FAA Compliance and Enforcement Program
www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/17213

TOM HOFFMANN

Nuts, Bolts, and Electrons

The Fight Against Fatigue

FAA's Efforts To Put the Issue to Bed

Workplace fatigue sounds like a simple problem with a straightforward solution: Skip the late-night talk shows and get more sleep. But for safety-critical aviation positions, such as aviation maintenance technicians (AMT), the problem of not getting enough rest can become a life-or-death situation. While much attention has been paid to fatigue issues in the pilot community, the FAA is also working hard to address how fatigue affects aviation maintenance professionals.

The performance of someone who has been awake for 20 hours is comparable with having a blood-alcohol content of 0.08 percent.

Most of us have no problems recognizing the telltale signs of someone who is fatigued. Bleary bloodshot eyes, incessant yawning, and a death-grip on an oversized coffee mug are all strong clues. There are, however, less obvious and more insidious effects that even a *venti*-sized java fix cannot quickly cure. Among them are:

- Lack of alertness
- Impaired physical and mental performance
- Poor decision-making skills
- Slow reaction time
- Forgetfulness
- Lack of interest
- Moodiness
- Diminished creativity

It is easy to see how detrimental the effects of fatigue can be on some of the core skills and attributes that a mechanic relies on to do the job safely. This is why the FAA has made addressing AMT fatigue a priority.

The new fatigue awareness video "Grounded" includes a 90-minute computer-based training module and quiz that you can view at www.FAASafety.gov for WINGS/AMT Program credit.

"Fatigue continues to be a serious problem for mechanics," says Dr. Katrina Avers, a research scientist in the Human Factors Research Division at FAA's Civil Aerospace Medical Institute (CAMI) who specializes in fatigue research. "Not only does it open the door for accidents and injuries in the workplace, but it can have more far-reaching effects that may endanger the safety and lives of others."

According to the National Sleep Foundation (www.sleepfoundation.org), the performance of someone who has been awake for 20 hours is comparable to someone with a blood-alcohol content of 0.08 percent, a level that is illegal for drivers in many states.

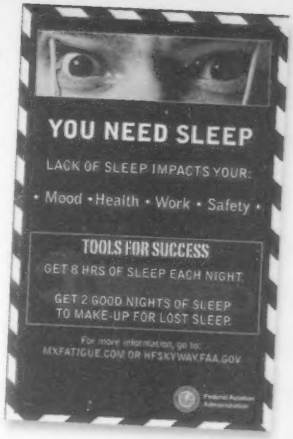
"The maintenance workforce is tired," says Dr. Bill Johnson, FAA's chief scientific and technical advisor for Human Factors in Aircraft Maintenance Systems. "The risk associated with a fatigued workforce is clearly documented and cannot be ignored."

To validate his concern, Johnson refers to an FAA study conducted in 2000 that showed the average mechanic sleeps about five hours a night. Factoring in reductions in the mechanic workforce as well as in wages over the years signals a problem that has the potential to get worse.

In August 2010, government and industry attendees of the FAA's first Maintenance Human Factors Leaders Workshop ranked fatigue among the top challenges facing the aviation maintenance industry today. Their conclusion: While there have been many solid efforts to address this challenge, we must do more.

What is the FAA doing?

Passionate about promoting awareness, Avers chairs a multidisciplinary maintenance fatigue workgroup that focuses on developing practical strategies to mitigate the risks of fatigue. After 12 months of research and collaboration with FAA's Flight Standards Service and CAMI, the workgroup developed several short- and long-term solutions to address fatigue. The short-term solution is a fatigue management toolbox with posters, newsletters, training materials, a fatigue-symptom checklist, and fatigue-assessment forms.


YOU NEED SLEEP
LACK OF SLEEP IMPACTS YOUR:
• Mood • Health • Work • Safety •
TOOLS FOR SUCCESS
GET 8 HRS OF SLEEP EACH NIGHT
GET 2 GOOD NIGHTS OF SLEEP TO MAKE-UP FOR LOST SLEEP
For more information, go to:
MXFATIGUE.COM OR HFSKYWAY.FAA.GOV

One of several in a series of FAA posters designed to raise awareness of fatigue.

All toolbox materials are available to download or order, free of charge, on the FAA's maintenance fatigue Web site: www.mxfatigue.com. The Web site also includes the recently added fatigue awareness video "Grounded," which is not your average government training film. A unique combination of special effects keep the video fast-paced and interesting. "Grounded" comes with a 90-minute computer-based training module and quiz and is also available to view for WINGS/AMT Program credit via www.FAASafety.gov.

The workgroup's long-term solutions are intended to provide the FAA, the aviation community, and individuals with clearly defined fatigue risk-management responsibilities. Strategies include an operational handbook on how to develop a fatigue risk-management system as well as recommendations to improve limitations on hours of service based on scientific modeling tools and the practicalities of maintenance operations.

"While we still have much further to go, the FAA has made good progress in fighting fatigue in aviation maintenance," says Johnson. "We've worked hard to position the maintenance community to do the right thing, and we're happy to see so many stepping up to that responsibility."

The maintenance industry, including GA operators, is using FAA's tools in initiatives to promote fatigue awareness. This includes implementing enhanced training, distributing fatigue-related information materials, and using fatigue-assessment forms and questionnaires to identify trends and monitor employee sleep patterns.

The FAA remains committed to tackling maintenance fatigue issues. The next Maintenance Human Factors Leaders Workshop: Fatigue Solutions for Maintenance, which brings together an invited group of FAA, other government, and industry human factors experts, is scheduled for March 29-30, 2011. The workshop will focus specifically on maintenance fatigue so watch for more information and future developments in coming issues of *FAA Safety Briefing*.

Be sure to make use of the many fatigue identification and risk-management tools currently available. But remember, the best way to beat fatigue is still to get the proper amount and quality of sleep.

Now, go get some rest!

Tom Hoffmann is associate editor of FAA Safety Briefing. *He is a commercial pilot and holds an A&P certificate.*

Calling All Mechanics

Keep Informed with

FAA's Aviation Maintenance Alerts

Aviation Maintenance Alerts (Advisory Circular 43.16A) provide a communication channel to share information on aviation service experiences. Prepared monthly, they are based on information FAA receives from people who operate and maintain civil aeronautical products.

The *Alerts*, which provide notice of conditions reported via a Malfunction or Defect Report or a Service Difficulty Report, help improve aeronautical product durability, reliability, and safety.

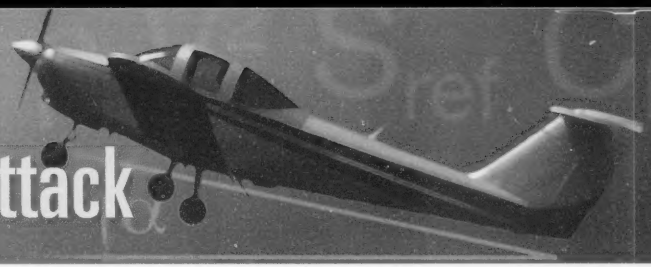
Recent alerts cover:

- Failed avionics master switch on a Cessna 425
- Failed nose landing gear on a Bellanca 1730A *Super Viking*
- Chafed fuel injector line on a Continental IO-550N engine

Check out *Aviation Maintenance Alerts* at: *www.faa.gov/aircraft/safety/alerts/aviation_maintenance/*

SUSAN PARSON

Angle of Attack



Leveraging the Little Things

Safety is the FAA's mission and, as you may have read in the "Looking Ahead" article on page 8, the agency has established an ambitious goal for reducing the GA accident rate over the next five years. Given the incredible diversity of GA pilots, aircraft, and operations, the challenge may seem as daunting and as nebulous as the cliché "solving world hunger."

Building on Bright Spots

In that light, the opening example in Chip and Dan Heath's 2010 book *Switch: How to Change Things When Change is Hard* is both illuminating and inspiring. As the story goes, an international charity employee assigned to an Asian country finds that he has six months to make a difference in the fight against malnutrition. Most people would be paralyzed in the mire of abstract macro-scale causes like poverty. Instead, this employee noticed, investigated, and then emulated what the book calls "bright spots," or small steps that make a big difference. Recognizing that knowledge alone does not change behavior, he created opportunities for village mothers to use a few simple nutrition-enhancing techniques on a daily basis. The results were striking. After six months, small changes to the mothers' culture and daily practices had produced measureable nutritional improvements in 65 percent of the village children.

As we will use this newly established Angle of Attack department to explain in the coming year, the FAA is taking a similar approach to the GA community's parallel challenge. Rather than regulate big changes, the FAA is looking to identify, communicate, and replicate best practices that can mitigate and, better yet, eliminate the leading GA accident causes. Just as the village mothers played the critical role in propagating healthier practices, the FAA is counting on certificated flight instructors (CFI) to be agents of safety-enhancing changes to GA culture and training. The FAASTeam's CFI workshops are already well established, and there will be additional opportunities for CFI outreach, education, training, and sharing of best practices over the coming months.

Small Change, Large Impact

That said, there is no need to wait before implementing some of the best practices that already contribute to safety. One such practice is the postflight briefing. This vital part of the training and learning process frequently gets short shrift in the bustle of real-world flight instruction. Pilots-in-training can also affirm that the postflight briefing is often little more than a laundry list recital of the student's mistakes. While better than a flight with no debrief at all, this approach leaves a lot of room for improvement.

Here's a small change that you as an individual CFI can leverage for better training impact. Before your next instructional flight, read Chapter 5 of the FAA's *Aviation Instructor's Handbook*, which describes how an effective and authentic postflight critique contributes to developing the student-pilot's skills in self-assessment and situational awareness. Review the suggested collaborative assessment process of guiding the student to replay, reconstruct, reflect, and redirect the experience of the flight. Then, put it into practice by making it a standard part of your postflight briefing. It is one way to help your students get the training and the "nutrition" they need to grow into safe and competent pilots.

You can find the FAA's *Aviation Instructor's Handbook* (FAA-H-8083-9A) at www.faa.gov/library/manuals/aviation/aviation_instructors_handbook/media/FAA-H-8083-9A.pdf

Susan Parson is editor of FAA Safety Briefing and a Special Assistant in the FAA's Flight Standards Service. She is an active general aviation pilot and flight instructor.

DON ARENDT

Vertically Speaking

Designing Safety into Decision-Making

Safety Management Systems for Helicopter Operators

While we are in the safest period in aviation history, helicopter operations have come under scrutiny in the wake of accidents and other safety incidents. The challenge is to find solutions that will improve the safety of helicopter operations and institutionalize best safety practices. The solution is not to use every safety technique available, but to use the sharpest tools in our safety toolkit.

One of the sharpest tools for helicopter operators, large and small, is Safety Management Systems (SMS). Simply stated, SMS enables helicopter operators to identify and manage risk. Managing risk is fundamental to what we do in aviation. Every time a helicopter takes off, flies, and lands safely, we have successfully managed risk.

SMS can sound complicated. What it does is put in place a formal approach to help you, as a helicopter operator, make the smartest risk-management decisions. This is because SMS is a disciplined and standardized approach. With an SMS, you first identify potential hazards and then analyze risk. The next steps are to rank hazards and assess risk, identify and implement preventions, and then monitor their effectiveness. SMS is a repeatable process where operators can review past experience and address known hazards while looking ahead and rigorously applying risk management

You can download the SMS Toolkit from the IHST Web site: www.ihst.org.

Smith Named IHST Co-chair

The new FAA co-chair of the International Helicopter Safety Team (IHST) is Kimberly Smith, who was recently named manager of the FAA Rotorcraft Directorate. Previously, Smith was manager of the FAA Small Airplane Directorate. She started her FAA career in 1991 at the Rotorcraft Directorate after serving as a civilian flight test engineer for the U.S. Navy.

"I flew in every helicopter the Marines were testing," Smith says. "The next logical step for someone as passionate as I am about improving safety was to work for the FAA." Smith sums up her passion clearly and emphatically: "People who fly helicopters have families, friends, and lives that they go home to at the end of the day and we want to make sure they get home safely. That's why I do what I do."

The Rotorcraft Directorate writes regulations and policies governing the design of rotorcraft and powered-lift aircraft, oversees the standard application of these regulations and policies, and validates FAA approval of foreign rotorcraft and powered-lift aircraft. It also is responsible for approval of the design and production of any civil aviation product in the FAA's Southwest Region.

Smith is excited about the IHST's work to improve global helicopter safety. As she sees it, the IHST's biggest challenge is "how can we reach the smaller operators, the ones with limited resources. How can we help them step up to improve safety?

"The SMS toolkit is a good start," Smith adds, "and next we will look at data monitoring tools. We may never reach zero helicopter accidents, but we have to keep trying."

to potential hazards. Further, it provides formal documentation of the sound operational judgment you previously applied.

How do you implement an SMS? It can be as easy as going to www.IHST.org and downloading the SMS Toolkit. Understanding that many helicopter companies are small businesses and recognizing the unique challenges faced by many helicopter operators, the International Helicopter Safety Team (IHST) came together to formally analyze helicopter safety risk and to develop more effective risk-management tools for helicopter operators. The SMS Toolkit is the first tool the IHST's Joint Helicopter Safety Implementation Team developed.

One of the sharpest tools for helicopter operators, large and small, is Safety Management Systems (SMS).

The SMS Toolkit is a comprehensive information source that provides operators with definitions, resources, sample forms, and a sample manual to help helicopter operators develop an SMS. Based upon the SMS framework established by the International Civil Aviation Organization, the information is compatible with emerging international requirements and those of several third-party-developed auditing systems, such as the International Standard for Business Aviation Operators and the Industry Audit Standard developed by the Air Charter Safety Foundation.

SMS is gaining acceptance in the aviation community as a valuable business tool. "Every company will benefit greatly from implementation of an SMS," said David Chevalier, CEO of Maui's Blue Hawaiian Helicopters. "It demands a great deal of effort and commitment, but is the best investment that any aviation company can make."

Dr. Don Arendt is manager of the FAA Flight Standards SMS Program Office. He has a background in systems engineering, human factors, and operational test and evaluation with degrees in industrial technology, operations research, and industrial/organizational psychology. He also holds FAA airline transport and flight instructor (Gold Seal) certificates.

The FAA Wants You!

Attention pilots, mechanics, and avionics technicians:

Here is your opportunity to start a career in the exciting field of aviation safety. The FAA's Flight Standards Service is currently hiring aviation safety inspectors and is seeking individuals with strong aviation backgrounds in maintenance, operations, and avionics. Starting salaries range from $41,563 to $78,355, plus locality pay. Benefits include federal retirement and tax-deferred retirement accounts and health insurance.

Qualifications vary depending on discipline. For details, please visit http://jobs.faa.gov/. Under "All Opportunities" you can search by job series 1825 or title containing "inspector."

Start your application today.

Flight Forum

Getting Weather Online

Just a quick note to inform you that the http://rucsoundings.noaa.gov site, referenced on pages 18-19 of the July/Aug. 2010 issue ("Maximizing Internet Resources"), has been made much easier for pilots to interact with. The latest edition of *FAA Safety Briefing*, Nov./Dec. 2010 page 39, references the NOAA/NWS National TAF METAR maps site: www.wrh.noaa.gov/zoa/mwmap3.php?map=usa.

Now, when you click on any airport, the RUC sounding for that airport will automatically load in the last tab of the pop-up information window. With just one click on any airport, tabs for METARs, aviation model guidance (LAMP), NWS forecast, PIREPs, decoded TAF, and RUC sounding are immediately available. Future RUC sounding forecasts out to 18 hours and updated every 3 hours load by clicking 'next hour | +2 hours | +3 hours' increment links. Go back to previous hours via keyboard backspace. AWC is now QICP certified and offers official pilot-briefing products, which is a large step in the right direction. The link to the QICP login is in the top-left window of aviationweather.gov: https://aviationweather.gov/qicp/login.php.

Thanks for mentioning the NOAA/NWS National TAF METAR maps in your latest issue. I've already seen an increase in positive feedback from pilots around the country!

Ken Venzke
NOAA/NWS Meteorologist-in-Charge
Oakland ARTCC

Maintaining IFR Proficiency

I liked your article ("Ready for the Soup?" Sept./Oct. 2010) and it drives home several good points. In reference to ODPs, I would say ALWAYS look at the ODPs (obstacle-departure procedures) anytime you see a "T" on your Runways Departure plate (NOC/NOS plates). As most pilots are flatlanders, they get spoiled with standard climb gradients. Even if you are operating part 91 (and some folks think you don't have to follow the takeoff minimums), I say you better have a darn good idea what's going on out there. Those minimums coupled with the ODPs can sure scratch up an airplane and the people in it in a heartbeat if you walk down the shadowy path of not knowing what's out there. Then, ask yourself if you and your plane can fly it.

Thanks for putting great effort into this article.
Mike Fischer

Thanks for taking the time to write and provide feedback on the IFR proficiency article. You make a good point about always looking at the ODPs. The FAA stresses that issue in the online Instrument Proficiency Check Guidance document, which is available at www.faa.gov/pilots/training/media/IPC_Guidance.pdf. As you correctly observe, there are a lot of pilots who simply don't think about (or even know about) ODPs. It's a great idea for a future article as well.

Returning to the Left Seat

Thank you for "Getting Back in the Game" (Sept./Oct. 2010). It hit me where I live and breathe. I last flew in 1985 and I just joined the Civil Air Patrol (CAP) because our local unit is short of qualified pilots. I was surprised that they would even bother with me considering how stale my skills are. It is a long, lonely climb back up the hill to my private pilot certificate BFR [flight review]; let alone my instrument currency. It was comforting to see that I wasn't the only one.

Mike Bailey
Lihue, Hawaii

We are glad you enjoyed the article and that you found the information helpful. Another good Web site to reference when returning to flying is the FAA's pilot information page: www.faa.gov/pilots.

FAA Safety Briefing welcomes comments. We may edit letters for style and/or length. If we have more than one letter on a topic, we will select a representative letter to publish. Because of publishing schedules, responses may not appear for several issues. While we do not print anonymous letters, we will withhold names or send personal replies upon request. If you have a concern with an immediate FAA operational issue, contact your local Flight Standards District Office or air traffic facility. Send letters to: Editor, *FAA Safety Briefing*, AFS-805, 800 Independence Avenue, SW, Washington, DC 20591, FAX (202) 267-9463, or e-mail SafetyBriefing@faa.gov.

SUSAN PARSON

Postflight

Happy New Year!

You will notice a few updates to *FAA Safety Briefing* in this inaugural issue of 2011, including a change to the title of this column. In part, it underscores the importance of the "how can I fly better" reflection that is ideally part of every postflight briefing.

Angle of Attack Department

We have also replaced the Hot Spots department with Angle of Attack, which debuts on page 28 of this issue. Angle of attack, or AoA, is one of the earliest concepts presented to a fledgling flyer. As you remember from ground school, AoA is the angle created between the chord line of the wing and the relative wind. By "attacking" the air that it meets and creating a pressure differential (lower pressure above, higher pressure below), the wing generates the lift required to fly. You also remember that a wing that exceeds its critical AoA can no longer generate lift, which results in an aerodynamic stall.

To emphasize the importance of the GA accident reduction strategy, we are replacing the Hot Spots department with Angle of Attack, which debuts in this issue.

For many reasons, it seemed fitting to borrow that key concept as a metaphor for describing how *FAA Safety Briefing* will support the FAA's 2011 angle, or approach, for attacking the GA accident rate. A vibrant GA community is vital to America's economic health. We can proudly acknowledge the many GA safety improvements that have occurred in the half-century of this magazine's existence, and we have pointed to some of those accomplishments in this 50th anniversary issue. Nevertheless, we recognize the need to do better; in other words, to lift GA safety to a higher level.

As you have read elsewhere in this issue, part of the strategy for reducing the critical AoA with respect to accidents is to provide information. Borrowing from the FAA Safety Team's (FAASTeam) 3-P risk-management approach, we will *Perceive* by identifying the top ten causes of GA accidents. Next, our task is to *Process* by analyzing their contributing factors. The third step is to *Perform* by developing and implementing strategies to mitigate both the primary causes and contributing factors.

The new Angle of Attack department emphasizes the importance of the GA accident reduction strategy, so it will be the primary place to look for the specific information we will present in each issue of the magazine. You will also find tips, techniques, and mitigation strategies threaded into other parts of the publication.

Sneak Peek at 2011

We have an exciting and informative editorial calendar planned for 2011. Here's a quick preview of what else is in store for the first half of the year.

- In the March/April issue, we will present articles in support of the themes for the FAASTeam's 2011 Safety Standdown on April 2.
- Our focus area for May/June is exploring issues, tips, and techniques related to air traffic control and the national airspace system.
- In the July/Aug. edition, known to many as the "Oshkosh issue," our theme will be mentoring and professionalism in GA. The goal, as always, is to present practical information that you will be able to apply to your own flight activities.

We look forward to hearing from you as the year progresses, and invite you to share your ideas, comments, and personal best practices for ensuring safe flights and happy landings.

Susan Parson is a Special Assistant in the FAA's Flight Standards Service. She is an active general aviation pilot and flight instructor.

JAMES WILLIAMS

FAA Faces

Earl Lawrence

Earl Lawrence Returns to Engineering Roots

For many, Earl Lawrence needs no introduction. He has spent years working closely with the FAA and the GA community in his positions with the Experimental Aircraft Association (EAA), most recently as vice president of Industry and Regulatory Affairs. In November 2010, Lawrence said goodbye Oshkosh and hello Kansas City, where he now serves as manager of the FAA Small Airplane Directorate.

A longtime engineer, pilot, and aviation mechanic with Inspection Authorization, Lawrence's new duties include overseeing the development of airworthiness standards, policy, and guidance for small aircraft; administering type, production, and airworthiness certification; and monitoring continued operational safety of GA aircraft. He also manages the budget, personnel, and training for the Small Airplane Directorate, which covers a large geographic area from Alaska to Florida.

"I'm very excited about getting back to manufacturing and engineering and to have the opportunity to work with the great people at FAA," Lawrence says.

The FAA position brings the Northrop University graduate back to where he started. After college, his first jobs were with Rockwell's Rocketdyne division, first as a rocket engine mechanic and then as a manufacturing engineer.

"It's a good match," says Dorenda Baker, director, FAA Aircraft Certification Service. "Earl's background in engineering, general aviation, and his knowledge of the FAA are a great combination for him to lead our team at the Small Airplane Directorate."

Lawrence recognizes the challenges, chief among which is the change in perspective. "It requires a change of thinking from my days with EAA," he observes. "As a regulator you have a very different job than that of an advocate, although safety is the top priority for both positions."

Lawrence's GA advocacy dates back to 1994 when he joined EAA as a government relations specialist. In the end, "I did a little bit of everything at EAA," Lawrence says, "including managing the EAA Ultralight program, Technical Counselor and Flight Advisor, EAA Aeromedical Advisory, and others. I also led EAA's efforts in the development of Light Sport Aircraft and Sport Pilot regulations."

One of his biggest challenges at EAA was to manage air show operations at EAA AirVenture Oshkosh. "Everything from aircraft parking to managing hundreds of volunteers was my responsibility," Lawrence says.

Anyone who has been to AirVenture can only marvel at the magnitude of this task and appreciate the organizational and management skills it takes to succeed. It helps that Lawrence also has both the people skills and an unbridled enthusiasm for aviation. "I have been interested in airplanes since I was a kid," Lawrence explains. "It's been a real privilege to be in the positions I've been in."

"I'm excited to have the opportunity to work with the great people at FAA."

The EAA leadership recognized Lawrence's talents and in 2000 promoted him to vice president. He was responsible for overseeing the EAA's government affairs offices in Oshkosh and in Washington, D.C. He was also responsible for EAA's aircraft operations, which include its touring B-17 and Ford Tri-Motor.

As the new year unfolds, Lawrence is focused on learning his new job and completing its associated training requirements. He will have plenty of help: "There's a lot of experience and expertise here at the Small Airplane Directorate, and my job will be to bring the most out of that." But, he concludes, "I still hope to get to Oshkosh for the big show this year."

Be on the lookout for him at AirVenture in July—this time sporting a new logo and possibly arriving in his 1964 Twin Comanche.

James Williams is FAA Safety Briefing's *assistant editor and photo editor. He is also a pilot and ground instructor.*

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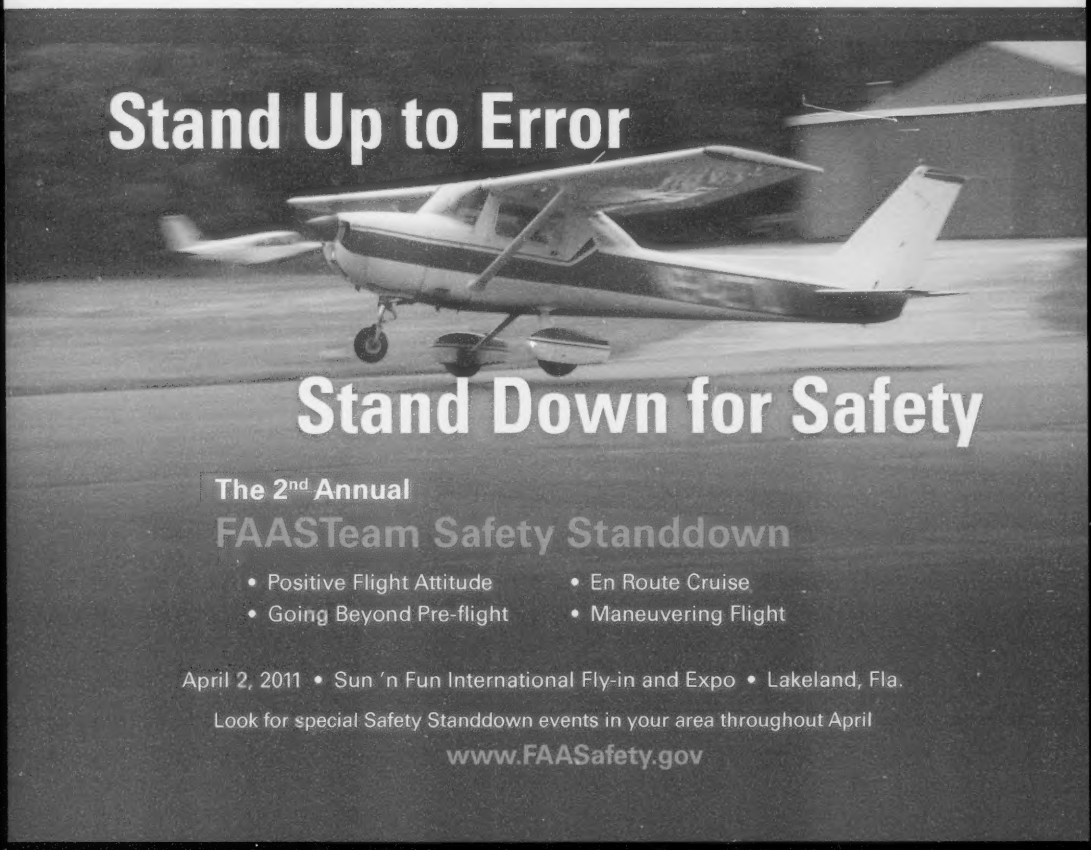
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